



NORAND^R 600 Series Industrial Mobile Computer
USER'S GUIDE

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PN: 961-054-014
Revision C
March 2000

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Section 1

General Information

About this User's Guide

Section 1

Contains general information about the components of your 600 Series Industrial Mobile Computer. This includes telling you how the user guide is organized, a summary of the sections, and the specifications.

Section 2

Tells you how to prepare for using your computer.

Section 3

Contains routine maintenance information for your computer. Routine maintenance includes recharging the battery, and cleaning the computer.

Section 4

Takes you through procedures to use when troubleshooting your computer. This section does not contain all troubleshooting that can be done by an authorized Customer Support Specialist, but does contain information

to aid you in determining the level of assistance you may need.

Appendix A

Pin-outs for the external connectors.

Appendix B

NORAND[®] Utilities Program's will be added at a later date.

Glossary

Contains definitions to words or phrases used in this user's guide.

Index

An alphabetically listing of the subjects and page numbers contained in this user's guide.

Industrial Mobile Computer Description

Industrial Mobile Computers are used in the marketplace to perform a wide variety of tasks. The 600 Series Industrial Mobile Computer provides features and benefits that include:

- Rugged design
- Fast data processing
- Touch screen display
- Signature capture

Additionally, your computer has the ability to use:

- CompactFlash cards
- Internal modem with CompactFlash card size and format

The following descriptions will familiarize you with the name, function, and locations of the components.

Figure 1-1, and Figure 1-2, on pages 1-3, and 1-4, show you these key components.

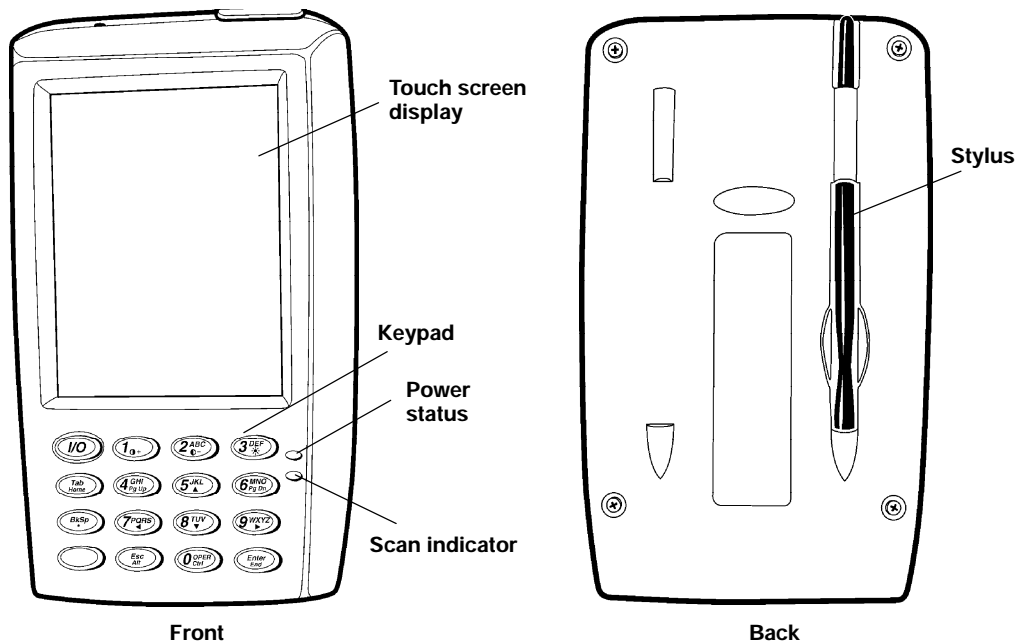


Figure 1-1
Front and Back View

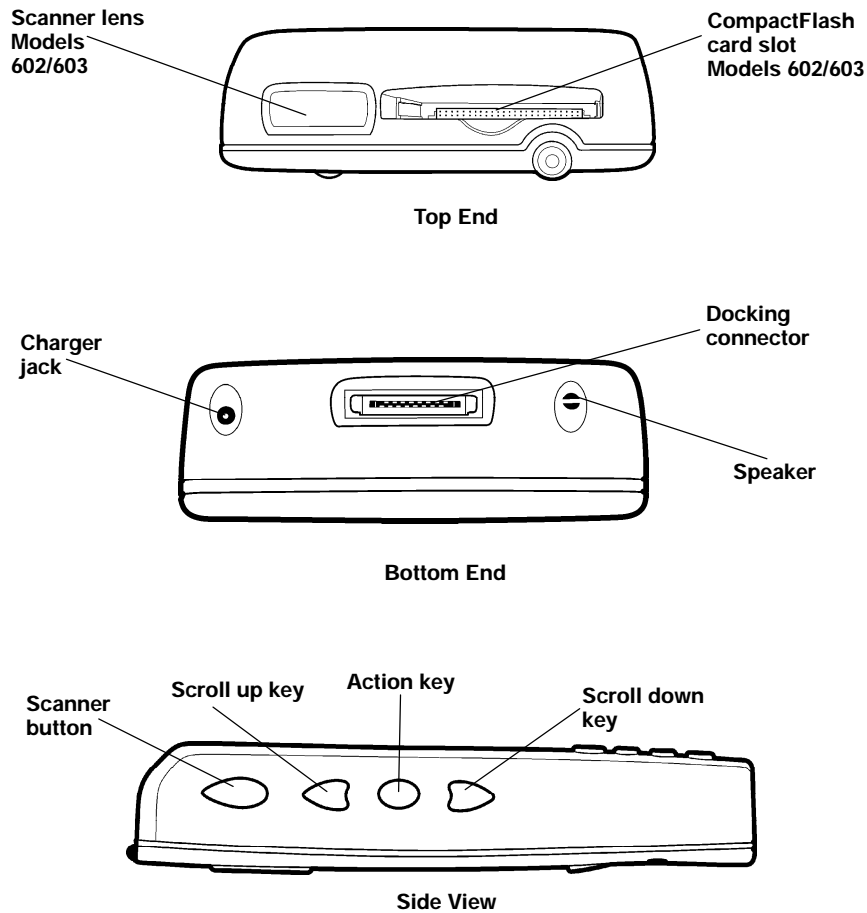


Figure 1-2
Top, Bottom, and Side View

Computer Keyboard

This Industrial Mobile Computer provides a 16 key keyboard. All keys with the exception of the [I/O] and **[Gold]** keys are programmable for individual functions. Figure 1-3 on page 1-5 details the basic keyboard layout.

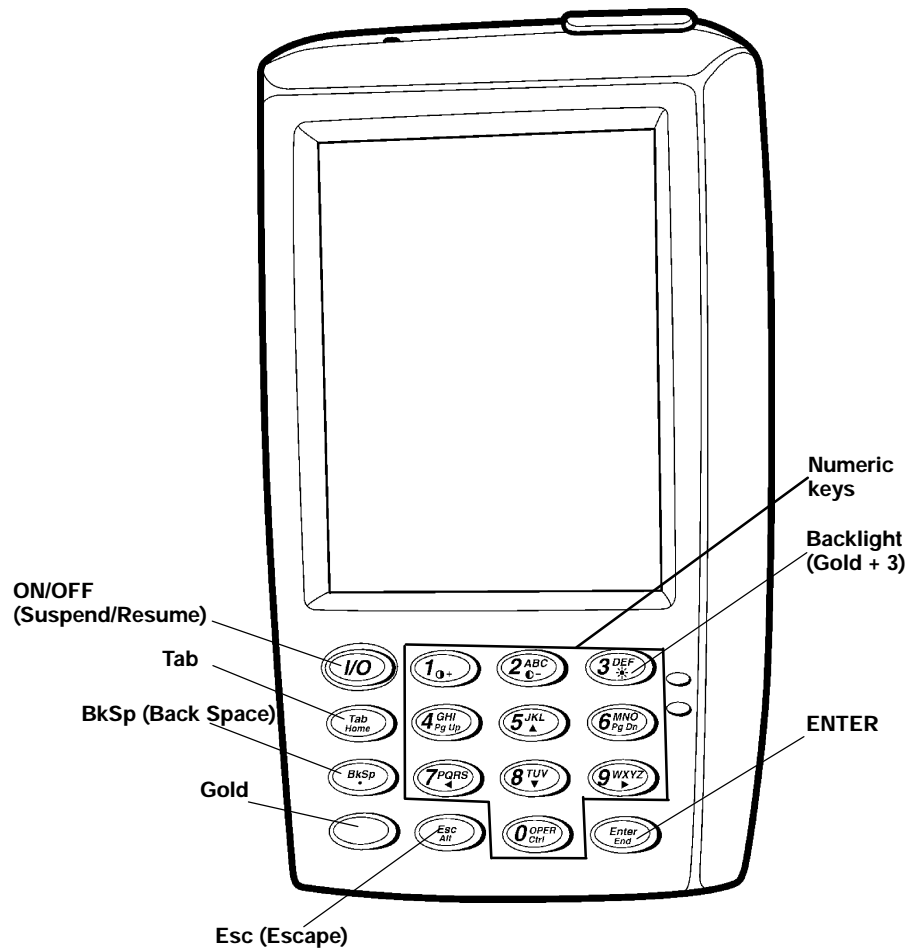




Figure 1-3
16-Key Keyboard

Display

This Industrial Mobile Computer offers an easy to read Liquid Crystal Display (LCD) with touch screen. The display shows status messages, keyed-in entries, customer or product lists, calculations, and prompts for responses. The touch screen can be used with a stylus, or your finger to choose functions, record signatures, or enter data.



Adjust Contrast

To adjust the display contrast level, hold down the **[Gold]** key and press either  to increase  to decrease.

Backlight (Models 602 and 603)

Your Industrial Mobile Computer display features a backlight. Backlighting provides a great benefit in dark conditions. Backlighting does, however, reduce battery life, therefore, turn off the backlight when not needed.

Backlight On/Off

To turn the backlight on, hold down the **[Gold]** key and press the  key. To turn the backlight off, hold down the **[Gold]** and press the  key again.

Battery

NOTE:

It is important to charge your Industrial Mobile Computer for at least 4 hours before you use it the first time.

This Industrial Mobile Computer uses a 1550 mAh lithium ion rechargeable battery.

If your computer goes into a shutdown mode because of low battery condition, your computer will not operate. Your computer does this to ensure that the data is protected.

Although the battery will protect the data against loss for up to 72 hours, it is best to put your unit on a charging source when you first detect low battery.

Memory

Three types of memory are available with this Industrial Mobile Computer:

- Main Memory DRAM
- Flash ROM
- CompactFlash Cards (Models 602 and 603)

Main Memory

Standard main memory DRAM configuration is 8 megabytes (MB) for the model 601 and 16 MB for Models 602 and 603. Memory and the real time clock is protected up to 72 hours by your computer shutting down operation after detecting low battery.

Flash ROM

The 512K Flash ROM stores the BIOS.

CompactFlash Cards

Your Industrial Mobile Computer employs an internal card slot. The internal slot is a CompactFlash Type I storage device. This device acts as the boot drive for the system. This CompactFlash card is not externally accessible.

Additionally, Models 602 and 603 provide an external card slot. The external slot is an expansion Type II slot. This Type II slot is accessible at the top of the computer. It can be used for an additional CompactFlash storage card, or a CompactFlash modem. A modem card must provide the RJ-11 jack. However, since part of the modem (because of the RJ-11) extends beyond the top of the unit it becomes vulnerable to breakage if dropped.

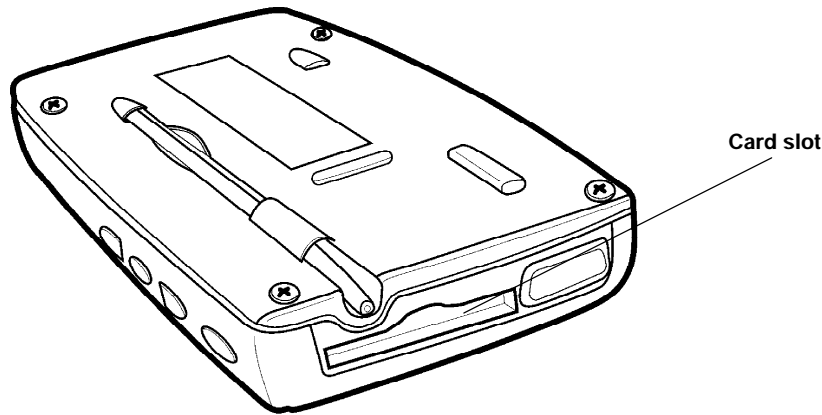


Figure 1-4
CompactFlash Card Slot

[Gold] Key

Hold down and press desired gold key functions. Continue to hold down the **[Gold]** key for each gold legend key stroke you wish to make.

Gold Legend Keypad Functions

Holding down the **[Gold]** Key and then a gold legend key allows additional keypad functions. These functions are described in Table 1-1 on page 1-8.

Table 1-1
Gold Legend Keypad Functions

Gold +	Icon	Result
1	☉+	Increases display screen contrast
2	☉-	Decreases display screen contrast
3	☀	Toggles Backlight on and off
Tab		Home
4	Pg Up	Page Up
5	Y	Up arrow

Table 1-1 (continued)
Gold Legend Keypad Functions

Gold +	Icon	Result
6	Pg Dn	Page Down
DEL		. (period)
7	A	Left arrow
8	B	Down arrow
9	"	Right arrow
ESC		Alt
0		Ctrl (control)
Enter		End

ON/OFF (Suspend and Resume) **Key**

In order to conserve power your Industrial Mobile Computer may automatically suspend when there has been no activity for a set period of time. The suspend time can be programmed through the setup parameters for your computer.

To force a suspend, press the [I/O] key, or a key that may be defined as the suspend key, and hold the key down for three seconds. To resume operation, press the [I/O] key.

Serial Port

Your computer can access serial devices through the dock's RS-232 serial port, using one of these accessories:

- " A serial cable plugs into and latches to the docking connector and provides a standard PC compatible DB-9 (male) serial port.
- " A data synchronous cable plugs into and latches to the docking connector and provides a DB-9 (female) which can be plugged into a standard PC serial port.

- The 600 Series Single/Vehicle Dock provides a standard PC compatible DB-9 (male) serial port.
- The 600 Series Multidock converts the signals from the computer's RS-232 serial port to RS-485 and brings out an RS-485 bus to two DB-9 female connectors compatible with Norand RS-485 networking.

Resetting

In the rare event that your Industrial Mobile Computer fails to respond to your input, it may be necessary to “reset.” To reset press the **[Gold]**, **[Esc]**, and **[0]** keys at the same time, hold the keys down for three seconds, and your computer will reboot. Resetting takes you to the start up screen.

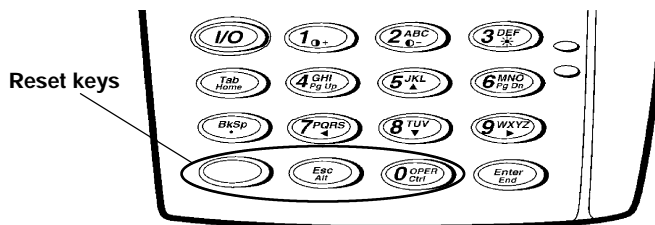


Figure 1-5
Resetting your Computer

Customer Response Center and Product Service

Factory Service

If your unit is faulty, you can ship it to your nearest authorized Service Center for factory-quality service. The address and telephone number are included on the Product Service Information Card shipped with your product.

CRC (Customer Response Center)

The Norand Mobile Systems Division of Intermec Technologies Corporation CRC (technical support), telephone number: 1-800-755-5505 (USA or Canada) or 1-425-356-1799.

Email: crc@norand.com *If you want to Email a problem or question to the CRC be sure to include the following information in your message:*

Your name

The company name

The company address

Phone number and Email address where you or the customer can be contacted

Problem description or questions (be specific)

Also if the equipment was purchased through a VAR please include the VAR information

Specifications

Size:	9.1 cm (3.6 inches) wide 15.5 cm (6.1 inches) long 3.0 cm (1.2 inches) tall
Temperature:	
Recommended Operating:	0 to +50_C (32 to +122_F)
Extreme Operating:	-20 to +60_C (-4 to +140_F)
Storage Temperature:	-20 to +60_C (-4 to +140_F)
Weight:	312 g (11 ounces.)
Humidity:	5 to 95% noncondensing
Static Protection:	17 kV (air discharge) 8 kV (current injection)
Battery:	3.8 V, 1550 mAh lithium ion battery
Hours of Operation:	8-10 hours
Charging Temperature:	0 to +50_C (32 to +122_F)
Communication:	
Interface:	RS-232, RS-485, Ethernet 10BASE-T (through Dock)
Protocol:	Norand Proprietary Communications Protocol (NPCP)
System Components:	
FLASH:	512K FLASH array (standard)
RAM:	8 Megabytes (601) 16 MB (602/603)
Operating System:	MS-DOS, Windows CE, and Windows 95 (future)
Card Options:	CompactFlash Type II
Display:	9.3 cm (3.75 inches); 240 (wide) 320 (long) pixels, monochrome LCD

[illegible]

- # Getting Started

Depending on the method you are using, the result will be the same but the steps you go through may vary from the way this user's guide presents the material.

Charging the Battery

Charging your battery pack can be done either in a dock or using an ac wall charger connected to your computer. Figure 2-1 on page 2-2 shows your computer being connected to an ac charger. Figure 2-2 on page 2-3 shows the computer and explains the Power Status conditions that you might see during the charging process.

Normal time to recharge your battery pack is four hours. When your battery is fully charged your computer should run about 8-10 hours.

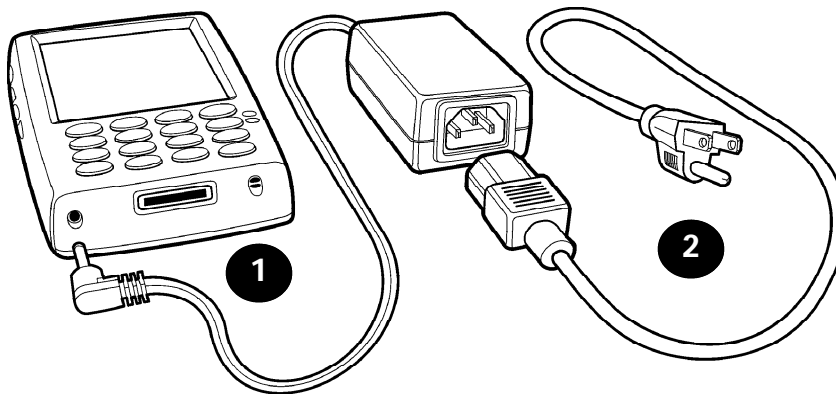
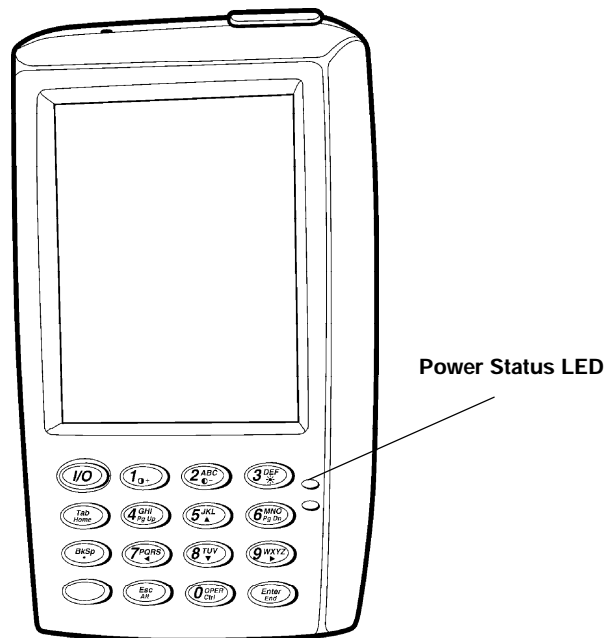


Figure 2-1
Computer Being Connected to a Wall Charger

The following devices charge the battery when seated in the unit.

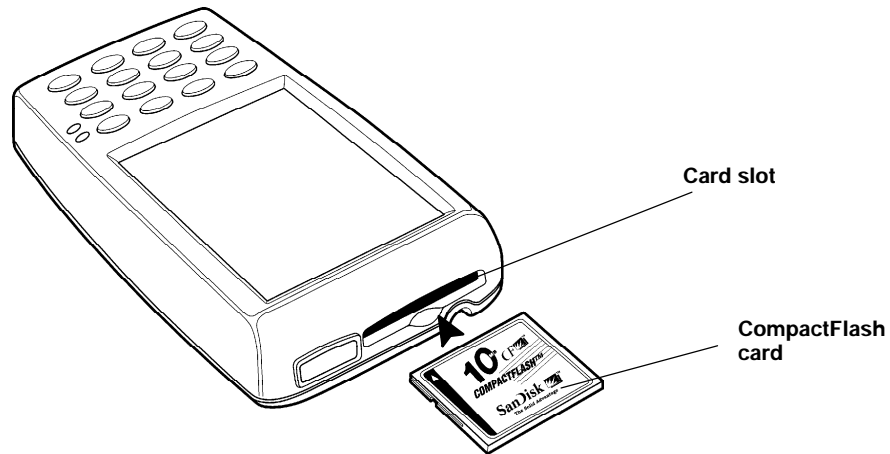
- " Single/Vehicle dock
- " Multidock



Power Status:
Blinking Red indicates low battery status
Continuous Red indicates charging in process
Continuous Green indicates charging complete
Blinking Green indicates computer is in standby mode
Off indicates normal operation

Figure 2-2
Power Status LED

Installing CompactFlash Card (Models 602 and 603)



***Figure 2-3
Accessing the CompactFlash Card Slot***

Removing the CompactFlash Card

Use the tip of your stylus, inserted in the slot and under the edge on the CompactFlash card, to slide the card out enough to get ahold of it and pull straight out on the card slot.

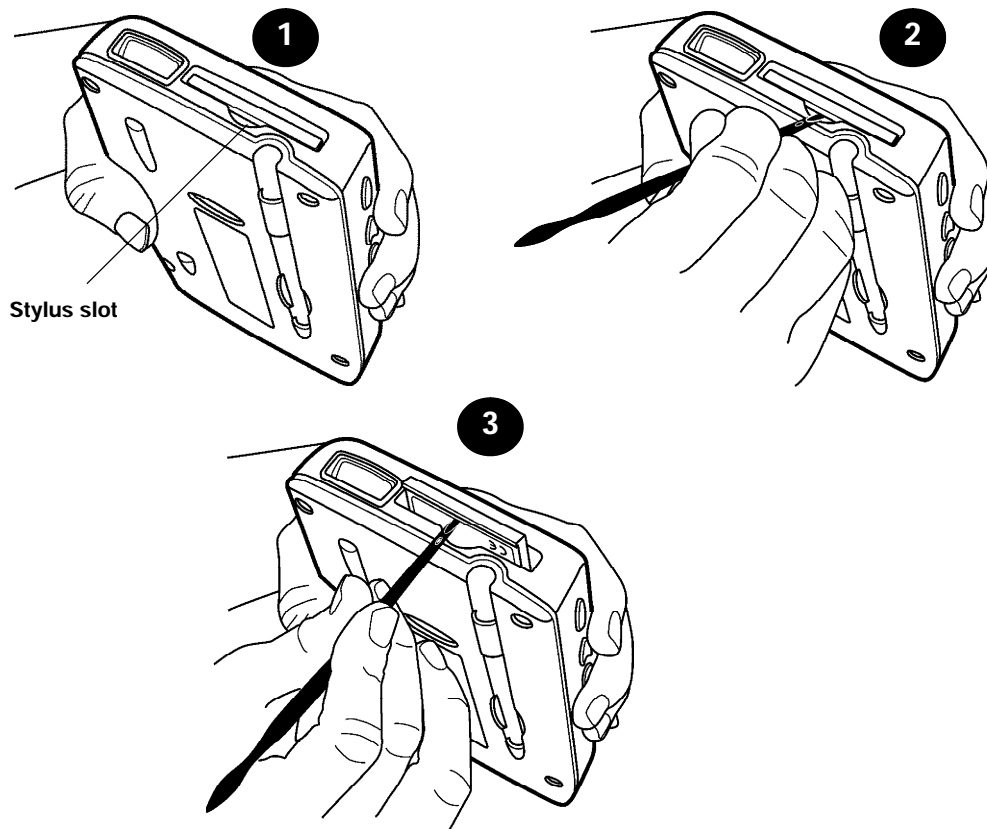


Figure 2-4
Removing CompactFlash Card

Installing a Modem Card

The modem card installs in the same slot and in the same manner as the CompactFlash card.

Booting Your Computer

For DOS Applications

1. Apply power by pressing the [I/O] (Resume/Suspend) key or pressing the reset keys ([**Gold**], [**Esc**], [**0**]) simultaneously and holding for three seconds. The **Power Status** LED will light.
2. The default load on the card displays these choices:
 1. Norand^R Utilities
 2. DOS Command Prompt. Making this choice puts you to the DOS prompt **600 C:\>**.
3. If you do not make a choice within 10 seconds, your 600 Series computer automatically boots to the Norand^R Utilities. From the Utilities Programs, assuming you have the appropriate host software and hardware, you can setup the communication options and also download your application.

For Windows CE Applications

The following steps outline the initial boot and Windows CE load on the 602 Computer.

1. The AT BIOS loads the boot sector from the IDE drive.
2. MS-DOS loads itself from the IDE drive and executes from RAM. It loads device drivers from C:\CONFIG.SYS then executes the system command shell, C:\COMMAND.COM, which then executes initial commands from C:\AUTOEXEC.BAT.

HIMEM.SYS is installed by MS-DOS during CONFIG.SYS processing, is currently required by LOADCEPC.EXE, and provides real-mode access to memory above one MB.

3. LOADCEPC.EXE is executed during the AUTOEXEC.BAT processing. On the 602 Computer, Windows CE itself consists of the NK.BIN binary file that contains the memory image of the Windows CE configuration. LOADCEPC.EXE copies this file image into RAM and then jumps to its starting address.
4. After NK.BIN (Windows CE memory image) is loaded and executed, Windows CE is in control of the system. From this point, only Windows CE functions are accessible to application developers for the 602 Computer.
5. TASKMAN.EXE (the Windows CE shell program) is executed by Windows CE. The first time CE is executed, "Task Manager" performs pen calibration and writes the calibration results to the registry. The registry is then flushed to persistent storage.
"Task Manager," then searches for the "\Storage Card\Wince\WCESTART.INI" file. If the file is found, the contents of the file are parsed for any user application to launch and execute. If no application is found, "Task Manager" allows manual browsing of the files system and execution of programs.

Installing Windows CE Components

This section outlines the Windows CE release installation for the NORAND 602 Computer. The installation includes a demo application.

Reflashing the 602 Computer installs the most current System Management Interface (SMI BIOS) for the 602 Computer and erases the current registry for Windows CE

that is stored in flash memory. Erasing the registry allows the system to use registry changes incorporated in the new Windows CE release.

NOTE: *Upgrading flash erases the registry and destroys previous settings.*

Perform the following steps:

1. System format a PC Card with MS-DOS 6.22 or 7.00. This requires a machine running DOS or Windows 95. You will not be able to system format a PC Card under Windows NT with MS-DOS. Place the appropriate HIMEM.SYS in the root directory. You may need a CompactFlash Adapter card (P/N: 850-547-001) which allows the CompactFlash card to be used in a Standard PCMCIA card slot on your development machine.
2. Copy the entire contents of the "DriveImg" directory to the PC Card. Place the card in the 602 Computer's external compact card slot.
3. Simultaneously press and hold the **[GOLD]**, **[Esc]**, and **[0]** keys for three seconds to reset the computer.

NOTE: *This image contains **CONFIG.SYS** and **AUTOEXEC.BAT** files. If you are using a development card (instead of a blank card), you will need to merge these files into your current configuration files. The CONFIG.SYS and AUTOEXEC.BAT files are listed on the next page. The 602 Computer files are different only during the Flash Update portion of the AUTOEXEC.BAT processing.*

EXAMPLE: CONFIG.SYS
device=C: \himem.sys /testmem:off /MACHINE:2

EXAMPLE: AUTOEXEC.BAT
ECHO OFF
path . ; c: \
cd WINCE
startce
: End

Running Windows CE and the Demo Application

Do the following to run the demo application using the Windows CE operating system:

1. Simultaneously press and hold the **[GOLD]**, and **[Esc]**, and **[0]** keys for at least 3 seconds to reset the 602 Computer.
2. Calibrate the touch screen. You may have to calibrate the screen several times until the calibration applet detects a “good” calibration within its tolerance limits. After finishing calibration, the Windows CE desktop will appear with the “Task Manager” application up and running.
3. The demo application starts from “Task Manager” with sample menus for several NMSD base applications: Invoice, Service, and Pickup and Delivery. Menu buttons for Print and Charge Card utilities are available for demo, but are not functional.

Downloading from Host Computer

1. Install your computer into a dock.
2. Download program into your computer.

There are several ways to download your application.

EXAMPLE:

You can load the program onto the CompactFlash card, install it into your computer, and select the program from the directory.

Opening your Application

Press the **[I/O]** (Resume/Suspend) key. Opening the application totally depends on your application definition.

Section 3

Routine Care and Maintenance

Your Industrial Mobile Computer is designed to withstand normal use in harsh environments. Occasional maintenance is required to ensure trouble-free operation. The procedures in this section should help keep your computer in good working condition.

Maintenance procedures included in this section provides instructions on identifying low battery conditions, and cleaning your computer.

Low Battery Indication

If you attempt to turn ON your computer and it does not respond, this usually means the battery is run down. Just to be sure, insert your computer in a dock or other charging device, turn it ON, and see if your computer responds. If it does, follow the instructions for **Charging Your Battery Pack**. If it does not respond when inserted in the charging source, another problem could exist. Refer to the **Troubleshooting** section for solutions.

Cleaning Your Computer

Periodic cleaning helps maintain the appearance and reliability of your computer. When cleaning your computer, inspect the keyboard, covers, display, connectors, and peripheral products for obvious signs of damage or wear.

B CAUTION: Do not use any abrasive cleaning compounds, ketonic solvents (acetone or ketone) or aromatic solvents (toluene or xylene) to clean any part of your computer. These solutions will cause permanent damage to your computer.

Never pour cleaners directly on the display or the case. Instead put the cleanser on a soft cloth and gently wipe the case.

Case and Display

We recommend cleaning the exterior of your hand-held computer using a soft cloth dampened with MICRO-CLEAN II cleanser, made by Foresight International, Inc. 4887 F Street, Omaha, NE 68127-0205 (phone: 1-800-637-1344).

Section 4

Troubleshooting

Should you encounter difficulties in routine operation, printing, or communications, there are a few things you may be able to do to correct the problem.

- Refer to your applications (software user) manual for printing and telecommunication procedures.
- Ensure that electrical and mechanical connections are secure and undamaged.

Troubleshooting Table

This Troubleshooting table lists conditions you might see and offers some basic remedies:

Table 4-1
Basic Troubleshooting

Condition	Solution
Low Battery	Recharge the battery.
Does Not Respond To Power	Check to ensure that your mobile computer is plugged in and that it is making good contact.
Mobile Computer Will Not Turn ON When The [I/O] Key Is Pressed	The battery may be low and need recharging.

Table 4-1 (continued)
Basic Troubleshooting

Condition	Solution
The Power Status LED Starts Blinking	The Power Status LED on the front panel of your mobile computer informs you of the status of your battery pack when it is connected to a charging device. The Power Status LED reads: Off when in a normal operating mode; Blinking red when the battery is low; Continuous red when charging; Continuous green when done charging; Blinking green when in a standby mode.
Mobile Computer Will Not Power Up, Screen is Blank.	1. Battery is <i>Critically Low</i> . 2. Ensure that your computer has been on a charger for at least five minutes, then remove from the dock and perform the reset procedure. The display will then be active. 3. Continue to charge your mobile computer for 4 hours to ensure that the battery is fully charged.
Mobile Computer Will Not Turn ON When Placed In A Dock	1. Ensure the dock is plugged in and your computer is securely seated in the dock..
Mobile Computer Shuts Down During Operation.	1. You may have a very low battery, try recharging the battery.

Table 4-1 (continued)
Basic Troubleshooting

Condition	Solution
Mobile Computer Does Not Turn OFF	<p>1. May not turn OFF when it is connected to a charging device.</p> <p>2. May not turn OFF when it is processing data.</p> <p>If condition 2 continues for a long period of time it will run down the battery.</p> <p>In the rare event that your computer locks up, try the three finger reset ([Gold], [Esc], [0]) to reboot.</p> <p>Contact support personnel, at 1-800-755-5505 (USA or Canada) or 1-425-356-1799.</p>
Mobile Computer Takes A Long Time To Boot Up After A Reset	<p>Normal time is between 30-45 seconds. If longer than this, may need to contact support personnel, at 1-800-755-5505 (USA or Canada) or 1-425-356-1799.</p>

Related Publications

- <http://www.intermec.com/manuals/manual.htm>
- 600 Series Dock Installation Instructions (P/N 962-040-002)

Repair Service

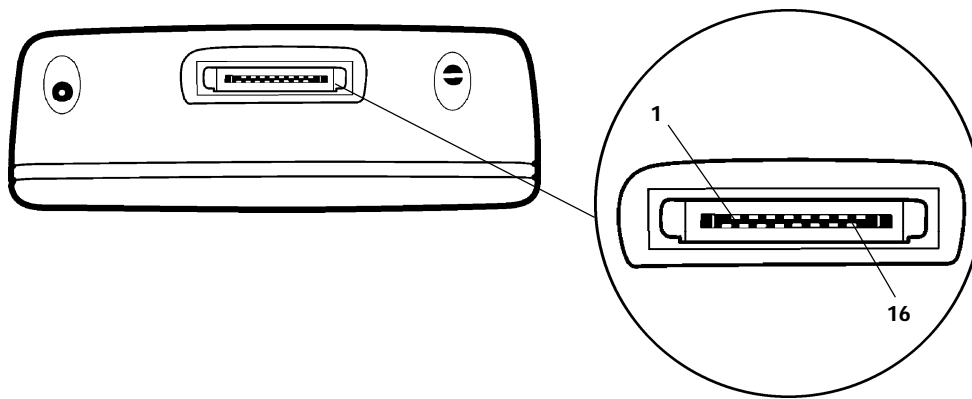
Be sure to carefully pack the unit and include a description of the problem and the measures you took to correct it.

If possible, include any printout (if applicable) or write down displayed error messages to illustrate the problem.

Appendix A

Connector Pin-Outs

16-Pin Docking Connector



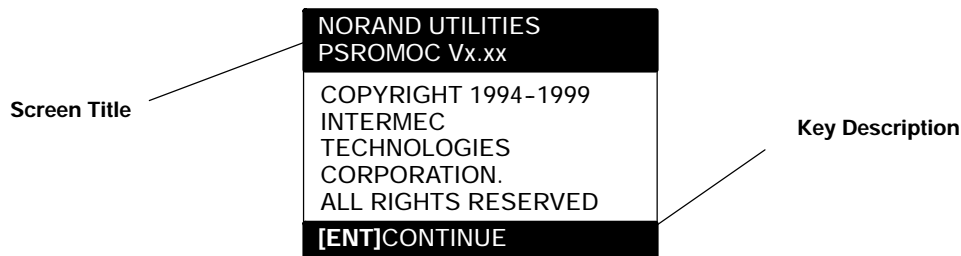
<u>Pin</u>	<u>Function</u>	<u>Pin</u>	<u>Function</u>
1	Ethernet TXP	9	RS-232 CTS
2	Ethernet TXN	10	RS-232 DSR
3	Ethernet RXP	11	RS-232 RI
4	Ethernet RXN	12	RS-232 DCD
5	No Connect	13	RS-232 DTR
6	Ground	14	RS-232 RTS
7	Ground	15	RS-232 TxD
8	RS-232 RxD	16	Charging power 10-30 Vdc, 0.5 amp

Appendix B

Norand^R Utilities Program

The Norand^R Utilities Program provides basic functions required to prepare your Industrial Mobile Computer for use.

Entry Point



This screen appears after cold-booting the computer.

- **Screen Title:** (dark bar at the top) contains the application name, such as “NORAND UTILITIES”, and the specific screen name, such as “MODEM PARAMETERS.”
- **Key Description:** (dark bar at the bottom) contains “action” keys. Movement keys, such as arrows, are not shown.

Pop-Up Menus

Pop-Up menus appear after a menu option. Press the number of an option you want to select; or press the **Y** or **B**

CHANGE UNIT ID	
UNIT ID	2233233
WORKGROUP	
6200IPL	
[F4]RESET FACTORY	
[ESC]QUIT	

keys to scroll through the list and press the **[ENT]** key to enter. Select one option each time.

Press the **[ESC]** key to exit a pop-up menu.

Drop-Down Lists

- | |
|-------------------|
| 1. NETWORK. . . |
| 2. MODEM/DIRECT |
| 3. ACCESSORY CARD |
| 4. HANDHELD |
| 5. REMOTE OPS |
| 6. INTERSERVER |

Drop-down lists provide suboptions for a pop-up menu.

Press the number of a suboption, or press the **Y** or **B** keys to scroll through the list and press the **[ENT]** key to enter. Select one suboption each time.

Press the **[ESC]** key to exit a drop-down list.

Alphanumeric Fields

NETWORK PARAMETERS	
SERVER NAME	
I.U.N. INCORPORATED	
SERVER IP ADDRESS	
	123.123.123.123
CLIENT IP ADDRESS	
	123.123.123.123
ROUTER	
	0. 0. 0. 0
SUBNET MASK	
	0. 0. 0. 0
[ESC]QUIT	

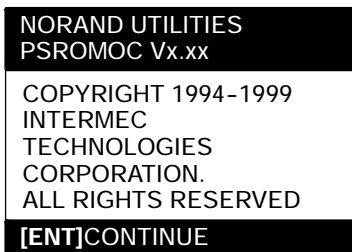
If your computer has a numeric keyboard, enter alphanumeric data by pressing the **A** and **"** keys to scroll back and forth through the set of alphanumeric characters. After a character is selected, press the **[ENT]** key to enter that character. Press **[ENT]** again to move to the next field.

If your computer has an alphanumeric keyboard, press the characters, then press the **[ENT]** key to move to the next field.

Press **[ENT]** to save the entries and exit the menu. Press the **[ESC]** key to exit without saving the entries.

Title Screen

When you reboot or reset your computer, the Title Screen appears:



Press the **[ENT]** key to continue.

Language Selection

" **NOTE:** *The NORAND Utilities Program checks files for available language options. If no language resource files exist, you do **not** see this menu.*

If your application requires non-English languages, the Language Selection menu appears. English is the first option, followed by up to nine additional options:

NORAND UTILITIES LANGUAGE SELECTION	
1.	ENGLISH
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
0.	
[ESC]QUIT	

Press the number of a language, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter.

Press the **[ESC]** key to exit this menu.

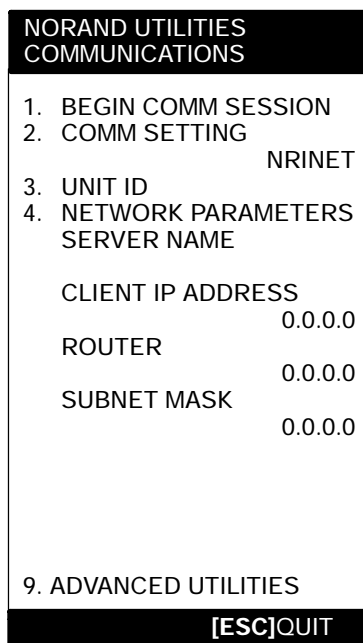
Communications Menu

" **NOTE:** *The default is the NPCP RS-485 communication.*

" **NOTE:** *If your computer does not support any of the features listed, the following pop-up menu appears. Press the **[ENT]** key to continue:*



The "Communications Menu" appears after the "Title Screen:"



Option 1 BEGIN COMM SESSION

If you select Option 1, the computer repeats communications until successful or you press the **[ESC]** key.

" NOTE:

*If you press the **[ESC]** key, this verification window appears:*

ARE YOU SURE YOU WANT TO STOP COMMUNICATIONS NOW?
[ENT]STOP [ESC]RESUME

" NOTE:

*This window may not appear immediately. For most communication settings, a session cannot be interrupted once it has started, so the **[ESC]** key is not processed until the next session is attempted.*

BEGIN COMM SESSION with NETWORK

If you select the communications option and Option **2**, **COMM SETTINGS** is set to NETWORK, this “Communication Status” menu appears:

NORAND UTILITIES COMMUNICATIONS	
COMM SETTINGS:	
NRINET	
SERVER NAME	
CLIENT IP ADDRESS	
	0.0.0.0
ROUTER	
	0.0.0.0
SIGNING ON	
STATUS:	20
[ESC]STOP COMM	

While SIGNING ON is onscreen, STATUS: may appear with the status of the attempted connection. Refer to **Session Status** on page B-12 for meaning.

Following a successful session, NORAND Utilities executes the downloaded application. If the necessary program files are not found, this message window appears:

MISSING SYSTEM FILES
[ENT]CONTINUE

If the session is unsuccessful, LAST SESSION appears with the failure status, such as “T803.”

NORAND UTILITIES COMMUNICATIONS	
COMM SETTINGS:	
NRINET	
SERVER NAME	
CLIENT IP ADDRESS	0.0.0.0
ROUTER	0.0.0.0
SIGNING ON	
STATUS:	20
LAST SESSION T803	
INVALID HOST NAME	
OR IP ADDRESS	
[ESC]STOP COMM	

BEGIN COMM SESSION with MODEM/DIRECT

If you select the communications option and Option 2, **COMM SETTINGS** is set to MODEM/DIRECT, this “Communication Status” menu appears:

```
NORAND UTILITIES
COMMUNICATIONS

COMM SETTINGS:
MODEM/DIRECT
MODEM TYPE
      NM2400/NM2400A
PROTOCOL  BPS FMT
TTY        2400 8N1
AUTO ANSWER
                                ESC
CONFIGURING

LAST SESSION:      T289
NO RESPONSE FROM
MODEM

[ESC]STOP COMM
```

NOTE:

The computer may stay at the “CONFIGURING” screen for about 20 seconds if a modem is not detected.

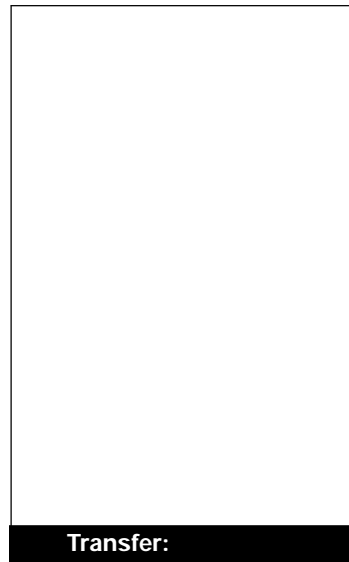
If the session is unsuccessful, **LAST SESSION** appears with the failure status, such as “T289.”

BEGIN COMM SESSION with ACCESSORY CARD

If you select the communications option and Option **2**, **COMM SETTINGS** is set to ACCESSORY CARD, the system attempts to execute the application from a PC card. If the “MISSING SYSTEM FILES” message appears, press the **[ENT]** key to continue.

BEGIN COMM SESSION with INTERSERVER

If you select the communications option and Option **2**, **COMM SETTINGS** is set to INTERSERVER, this “Communication Status” menu appears:



Press the **[ESC]** key to exit this screen.

Session Status

The first single character code ("T") is the session status, which applies to all COMM SETTINGS. There are five statuses possible:

- „ **“G”** Good session
- „ **“T”** Unexpected end of transmission
- „ **“H”** Incorrect file header encountered
- „ **“F”** File error encountered
- „ **“L”** Telecommunications aborted before first file header received

The three digit number ("289") indicates the specific protocol error. These error codes apply when COMM SETTINGS is set to NPCP RS-485 or NPCP RS-232:

- “0”** No error
- “1”** MININET.EXE not installed
- “6”** User aborted communications by pressing **[ESC]**
- “11”** Invalid parameter specified in control file

" NOTE:

The following values indicate an error returned by MININET.EXE. 100 is added to the error returned by MININET.EXE to avoid conflict with other defined errors.

- “101”** Illegal buffer length
- “103”** Invalid command
- “105”** Command timed out
- “106”** Message incomplete
- “108”** Illegal local session number
- “109”** No resource available
- “110”** Session closed
- “111”** Command canceled
- “113”** Duplicate name in local name table
- “114”** Name table is full
- “115”** Name is deregistered, command complete
- “117”** Local session table full
- “118”** Session open rejected

"119"	Invalid name number
"120"	No answer
"121"	Name not found
"122"	Name in use on remote adapter
"123"	Name deleted
"124"	Session ended abnormally
"125"	Name conflict
"126"	Incompatible remote device
"133"	Network interface is busy
"134"	Too many commands outstanding
"135"	Invalid LAN adapter number
"136"	Command completed while cancel occurring
"138"	Command not valid to cancel
"164" - "179"	Unusual network condition
"180" - "354"	Adapter malfunction

These error codes apply when COMM SETTINGS is set to MODEM/DIRECT and PROTOCOL is set to TTY:

"0"	No error
"6"	[ESC] key pressed, aborting communications
"11"	Invalid parameter specified in control file
"23"	End of transmission
"101"	Line lost
"102"	Parity error
"103"	Character gap too long
"104"	Data loss
"105"	Excessive NAKs (negative acknowledgements)
"106"	Block count error
"107"	Block check error
"108"	Block framing error
"109"	Control character error
"2xx"	Modem error
"xx"	Hayes response code, or code defined by program:
"03"	No carrier
"04"	Command not recognized
"06"	No dial tone
"07"	Dialed number is busy

"08"	No answer
"86"	Error sending command to modem
"87"	Expected numeric response not numeric
"88"	Invalid response format
"89"	No significant response from modem
"97"	COM port disabled by system due to low battery or removal of PC card modem.
"98"	Unrecognized English response
"99"	Memory allocation error

" NOTE:

For response codes not listed above, if you purchased this modem from the Norand Mobile Systems Division of Intermec Technologies Corporation, contact Customer Response Center at 800-755-5505 (U.S.A. or Canada) or 425-356-1799.

*If this modem is **not** from the Norand Mobile Systems Division, contact your modem supplier.*

These error codes apply when COMM SETTINGS is set to NOVELL NETWARE:

"0"	No error
"6"	User aborted communications by pressing [ESC] key.
"100"	Connection to host failed. Verify network connection, verify that PENKEY login name exists on host.
"101"	Could not access include file. Verify existence of include file on host.
"102"	Could not allocate needed memory.

These error codes apply when COMM SETTINGS is set to NRINET:

- "0"** No error
- "6"** User aborted communications by pressing **[ESC]** key.
- "800"** PC TCP/IP kernel is missing.
- "801"** Invalid client IP address. Make sure the entry for CLIENT IP ADDRESS is correct, or make sure the DHCP server is running.
- "802"** Invalid Service or Service Type, or invalid port number.
- "803"** Invalid host name or IP Address. Make sure the entry for SERVER NAME is correct, and that the server is running.
- "804"** Could not create socket. Check all cables and network connections.
- "806"** Block sent was incomplete or block received was incomplete.
- "807"** Client and server negotiation failed.
- "808"** Server specified an unsupported block size.
- "809"** Invalid buffer pointer.
- "810"** All server connections are already in use. Try again later.
- "811"** Timeout while sending data. Connection to remote machine dropped. Make sure the host is still running, and check all cables and network connections.
- "812"** Timeout while receiving data. Connection to remote machine dropped. Make sure the host is still running, and check all cables and network connections.
- "813"** An attempt to send data to the server failed due to a closed connection. Ensure the server is still running, check all cables and network connections.
- "814"** An attempt to receive data from the server failed due to a closed connection. Ensure the

- server is still running, check all cables and network connections.
- “815”** Could not access the network attach information.
- “816”** An error occurred reading the network attach information.
- “817”** Server did not respond to the connect request. Ensure the server is still running, check all cables and network connections.
- “818”** An error occurred reading the TCP/IP kernel information.
- “935”** Operation would block.
- “939”** Destination address required.
- “940”** Message too long.
- “948”** Address already in use.
- “950”** Network is down.
- “951”** Network is unreachable.
- “952”** Network dropped connection or reset.
- “954”** Connection reset by peer.
- “955”** No buffer space available.
- “960”** Connection timed out.
- “961”** Connection refused.
- “962”** Too many levels of symbolic links.
- “963”** File name is too long.
- “964”** Host is down.
- “965”** Host is unreachable.
- “966”** Directory not empty.

These error codes apply when COMM SETTINGS is set to TFTP:

If using PSROM0C V2.xx:

- "0"** No error.
- "1"** PSROB0C.EXE could not be loaded.
- "6"** User aborted communications by pressing **[ESC]** key.
- "100"** TCP/IP kernel is missing.
- "101"** Invalid client IP address. Ensure the entry for CLIENT IP ADDRESS is correct or ensure the DHCP server is running.
- "201"** TFTP.EXE failed.
- "202"** TFTP.EXE not found.
- "203"** Unknown server.
- "204"** Remote file name is invalid.
- "205"** Local file name is invalid.
- "206"** File not found on server.
- "207"** Timeout.

If using PSROM0C V3.xx:

- "202"** Could not create a socket.
- "204"** Unknown server name
- "205"** Error sending to server.
Check network connections.
- "206"** Error receiving from server.
Check network connections.
- "207"** Receive timeout.
Check network connections.
- "208"** Server error. Server terminated transfer.
Check server to find out what error occurred.
- "209"** Error writing to file.
Make sure computer has enough disk space to hold all files from the server.

Option 2 COMM SETTING

If you select this option, the “Communications Settings” drop-down list appears:

- | |
|--|
| <ol style="list-style-type: none">1. NETWORK. . .2. MODEM/DIRECT3. ACCESSORY CARD4. HANDHELD5. REMOTE OPS6. INTERSERVER |
|--|

Press the number of a communications settings, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter.

Suboption 1 NETWORK

If you select this suboption, a drop-down list appears with various networks:

- | |
|---|
| <ol style="list-style-type: none">1. NPCP RS4852. NPCP RS2323. NRINET4. TFTP5. NOVELL NETWARE |
|---|

Press the number of a network or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the “Communications Menu” with the selected network assigned to Option **2. COMM SETTING**. See a sample menu on page B-6.

Press the **[ESC]** key to exit this drop-down list. The computer takes you to the “Communications Menu.”

Suboption 2 MODEM/DIRECT

If you select this suboption, the computer returns to the Communications Menu with the MODEM/DIRECT option assigned to Option **2. COMM SETTING:**

NORAND UTILITIES COMMUNICATIONS	
1.	BEGIN COMM SESSION
2.	COMM SETTING MODEM/DIRECT
3.	UNIT ID
4.	MODEM PARAMETERS MODEM TYPE NM2400/NM2400A PROTOCOL BPS FMT TTY 2400 8N1 AUTO ANSWER ESC
5.	PHONE NUMBER 9...131369282
9.	ADVANCED UTILITIES

Suboption 3 ACCESSORY CARD

Suboption 6 INTERSERVER

If you select either of these suboptions, the computer returns to the Communications Menu with ACCESSORY CARD or INTERSERVER assigned to Option **2. COMM SETTING.**

[illegible]

Suboption 4 HANDHELD

Suboption 5 REMOTE OPS

These suboptions are not supported at this time.

Option 3 UNIT ID

If you select this option, the “Change Unit ID” pop-up menu appears:

CHANGE UNIT ID	
UNIT ID	2233233
WORKGROUP	
6200IPL	
[F4]RESET FACTORY	
[ESC]QUIT	

Enter up to eight characters to change the Unit ID. Use the [**←SP**] key to backspace and use the [**CLR**] to restore the previous ID. Press the [**ENT**] key to save the new ID and return to the “Communications Settings” menu. Press the [**F4**] key to reset the ID to factory default. Press [**ESC**] to exit this pop-up menu.

Option 4 NETWORK PARAMETERS

Network Parameters appears as Option 4 when Option **2. COMM SETTINGS** is set to one of these three NETWORK options: NRINET, TFTP, or NOVELL NETWARE.

NETWORK PARAMETERS with NRINET or TFTP

If you select this option and Option **2. COMM SETTINGS** is set to NRINET or TFTP, this “Network Parameters” pop-up menu appears:

NETWORK PARAMETERS	
SERVER NAME	
SERVER IP ADDRESS	
0. 0. 0. 0	
CLIENT IP ADDRESS	
0. 0. 0. 0	
ROUTER	
0. 0. 0. 0	
SUBNET MASK	
0. 0. 0. 0	
[ESC]QUIT	

If you have an alphanumeric keyboard, press the characters to the host name, then press the **[ENT]** key to save the entry and move to the next field.

If you have a numeric keyboard, use the **A** and **"** keys to scroll back and forth through the given set of alphanumeric characters. After a character is selected, press the **[ENT]** key to enter that character. Press **[ENT]** again to move to the next field. Press the **Y** or **B** keys to move between fields.

Press **[ENT]** to save the entries and exit the “Network Parameters” menu. Press the **[ESC]** key to exit without saving the entries.

NETWORK PARAMETERS with NOVELL NETWARE

If you select this option and Option **2. COMM SETTINGS** is set to NOVELL NETWARE, this frame type drop-down list appears:

- 1. 802.2
- 2. ETHERNET II
- 3. 802.3 RAW
- 4. 802.2 W/ SNAP

Press the number of a frame type, or press the **Y** or **B** keys to scroll through the list and press the **[ENT]** key to enter. Press the **[ESC]** key to exit this drop-down list without changing the frame type.

Option 4 MODEM PARAMETERS

Modem Parameters appears as Option 4 when Option **2. COMM SETTINGS** is set to MODEM/DIRECT.

If you select this option, the “Modem Parameters” pop-up menu appears.

MODEM PARAMETERS	
1. MODEM TYPE	NM2400/NM2400A
2. PROTOCOL	TTY
3. BPS RATE	2400
4. DATA FORMAT	8N1
5. AUTO ANSWER	ESC
[ESC]DONE	

Press the number of a modem parameters option, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** button to enter.

Suboption 1 MODEM TYPE

If you select this suboption, a drop-down list appears with supported modem types. Press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** button to enter.

- " If you select drop-option **OTHER EXTERNAL** or **OTHER INTERNAL**, the "Modem Init String" pop-up menu appears:

MODEM INIT STRING

ATE0V0Q0&M0&S1&C1&
D2&R/QX0L1

[F2]TEST STRING
[ENT]O ESC]QUIT

- a. Enter the initialization string of the modem you are using. Refer to your modem's reference manual for information.

" **NOTE:** *Use **A** and " keys on numeric keyboards to scroll the alphanumeric character set.*

" **NOTE:** *If you leave this menu blank, a string is not saved.*

- b. Press the **[ENT]** key to enter the string or press **[ESC]** to exit this pop-up menu.

" **NOTE:** *Testing the modem initialization string is optional.*

" To test the modem string, do the following:

- a. Press the **[F2]** key. The computer replies with "PLEASE WAIT" and tests the string:

MODEM INIT STRING

ATE0V0Q0&M0&S1&C1&
D2&R/QX0L1
PLEASE WAIT . . .

[F2]TEST STRING
[ENT]OK [ESC]QUIT

Momentarily, the computer displays the modem's response:

MODEM INIT STRING

ATE0V0Q0&M0&S1&C1&
D2&R/QX0L1
RESULT: 97

[F2]TEST STRING
[ENT]OK [ESC]QUIT

" **NOTE:** *Zero indicates the modem was successfully configured. Any other value indicates an error. See page B-13 for a list of modem errors. If you purchased this modem from the Norand Mobile Systems Division, contact Customer Response Center at 800-755-5505 (U.S.A. or Canada) or 425-356-1799.*

*If this modem is **not** from the Norand Mobile Systems Division, contact your modem supplier.*

- b. Press the **[ENT]** key to update the modem initialization string. The computer returns to the "Modem Parameters" pop-up menu with OTHER EXTERNAL or OTHER INTERNAL assigned.

Suboption 2 PROTOCOL

If you select this suboption, a drop-down list of available protocols appears:

1. TTY

" **NOTE:** *TTY is the only protocol currently supported.*

Press the number of a protocol, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the "Modem Parameters" pop-up menu with the selected protocol assigned.

Press the **[ESC]** key to exit this drop-down list.

Suboption 3 BPS RATE

If you select this suboption, the BPS Rate drop-down list appears with various bits per second (BPS) rates:

1.	1200
2.	2400
3.	4800
4.	9600
5.	19200
6.	38400
7.	57600
8.	115200

Press the number of a BPS rate, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the "Modem Parameters" pop-up menu with the selected BPS rate assigned.

Press the **[ESC]** key to exit this drop-down list.

Suboption 4 DATA FORMAT

If you select this suboption, the “Data Format” drop-down list appears:

1. 8N1
2. 7E1

Press the number of a data format, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the “Modem Parameters” pop-up menu with the selected data format assigned.

Press the **[ESC]** key to exit this drop-down list.

Suboption 5 AUTO ANSWER

This suboption is not supported at this time.

Option 5 NETWORK INTERFACE

This option appears only if the computer supports multiple network interface.

“Network Interface” appears as Option 5 when Option **2. COMM SETTINGS** is set to NRINET, TFTP, or NOVELL NETWARE.

If you select this option, the “Network Interface” drop-down list appears:

1. ETHERNET
2. RS485

Press the number of a network interface, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter. The computer returns to the “Communications” menu with the selected network interface assigned.

Option 5 PHONE NUMBER

Phone Number appears as Option 5 when Option **2. COMM SETTINGS** is set to MODEM/DIRECT.

If you select this option, the “Phone Number” pop-up menu appears:



PHONE NUMBER

9...13193693282

[.]DIALING PAUSE
[ENT]OK [ESC]QUIT

Enter up to 16 characters. Use the [**←SP**] key to back-space; use the [**CLR**] to reset to the previous phone number, and press [**.**] to insert a dialing pause command (“,”).

Press the [**ENT**] key to save the new phone number and return to the “Communications Settings” menu.

Press the [**ESC**] key to exit this pop-up menu.

Option 9 ADVANCED UTILITIES

If you select this option, the “Advanced Utilities” menu appears:

NORAND UTILITIES ADVANCED UTILITIES
1. SET DATE/TIME 2. BATTERY STATUS

Press the number of an advanced utility option, or press the **Y** or **B** keys to scroll through the list, then press the **[ENT]** key to enter.

NOTE: *Suboption 4 FORMAT RAM CARD appears only if the FORMAT.COM program is in the PATH.*

Suboption 1 SET DATE/TIME

If you select this suboption, the “Set Date/Time” pop-up menu appears:

SET DATE/TIME	
DATE:	01/20/80
TIME:	23:12:04
[ESC]QUIT	

Enter numbers for the month, day, year (1980–2079), hour, minute, and second (up to 23:59:59). Press the **[ENT]** key after each entry. An incorrect entry causes the computer to default to the initial number. Press the **[ESC]** key to exit this pop-up menu.

Suboption 2 BATTERY STATUS

Use this suboption to check battery status. The “Battery Status” screen appears when you select this suboption:

NORAND UTILITIES BATTERY STATUS	
MAIN PACK	CHARGING
VOLTAGE	7.37
CAPACITY	23:59
CHARGER	16.22
[ESC]QUIT	

- " **MAIN PACK:** Status of the main battery pack:
 - " **"OK"** Battery operating properly.
 - " **"LOW"** Power running low, needs recharging.
 - " **"CRITICAL"** Power dangerously low, recharge soon or lose all data.
 - " **"CHARGING"** Main battery pack recharging.
 - " **"MISSING"** Main battery pack not loaded or detected.
- " **VOLTAGE:** Amount of operational battery voltage.
- " **CHARGER:** Amount of voltage supplied by external charge source.

Glossary

Applet

Small applications, typically bundled with the operating system.

Boot Default Drive

The drive from which the computer will boot.

Button

An object that can be clicked, selected, or unselected in your windows. Usually an event tree is attached to a button so that when it is clicked, an action is performed.

CompactFlash (CF) Card

A small size (half the size of a normal PC card) which has been specially designed to meet the needs of small hand-held computers. This card can be inserted and removed from a card slot.

CPU

Central Processing Unit.

Default Drive

See Boot Default Drive.

Dock

A device in which one or more hand-held computers may be placed for charging and communication.

DOS (Disk Operating System)

A program or set of programs that tells a disk-based computer system how to schedule and supervise work, manage computer resources, and operate and control its peripheral devices.

Download

The transmission of data from a host computer to a mobile computer.

Ethernet

A 10-Mbps, coaxial standard for LANs. Also slang for the coaxial cable that carries the standard.

Flash

A technology for nonvolatile memory storage. A special type of EEPROM that can be erased and reprogrammed.

Flash Card

A memory storage PC Card that meets the ATA standard.

GUI (Graphical User Interface)

Provides a graphical representation of the environment for user interaction.

I/O (ON/OFF) Key

The power suspend or resume switch on the 600 Series Computer — *not the same as resetting*. Suspends or resumes operation depending on the current state of the computer.

Icon

A symbol on the computer desktop that graphically represents the purpose or function of an application or file.

Industrial Mobile Computer (IMC)

A generic acronym for a NORAND Industrial Mobile Computer, including the 600 Series (601, 602, and 603).

Laser Scanner

A method of reading bar codes that uses a coherent light consisting of one frequency with high density of energy.

LCD

Liquid Crystal Display.

Modem

A communication device that enables a computer to transfer information over a telephone line.

Network

A computer data communications system which interconnects computer systems at various sites.

NMSD

NORAND Mobile Systems Division of Intermec Technologies Corporation.

Norand^R Utilities

A program that provides the basic functions needed to prepare the computer for use, including program load and data communications.

Port

The physical hardware communication port.

Protocol

A formal description of message formats and the rules computers must follow to exchange those messages.

RAM (Random Access Memory)

Dynamic memory, sometimes known as main memory or core.

RS-232 C (Recommended Standard 232)

An Electronic Industries Association standard interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) with serial binary data interchange.

RS-485

An Electronics Industry Association (EIA) standard for multipoint communications. The typical use for RS-485 is a single PC connected to several addressable devices that share the same cable. You can think of RS-485 as a "party-lined" communications system.

SanDisk

A brand of flash memory card.

Serial Interface

An interface in which the terminal or computer sends single bits of information to the other device, one after another.

Stylus

A pen-shaped device, used for input on a touch screen by tapping or sliding.

TCOM or Telecom

Telecommunications.

Terminal

Circuit terminating device such as a industrial mobile computer.

Tethered

A device requiring a cable between the computer and the scanner.

Touch Screen

A display which responds to tactile pressure as input.

Type I Card

Type I CF cards can be up to 3.3 mm thick and are used primarily for additional mass storage.

Type II Card

Type II CF cards can be up to 5 mm thick. These cards are often used for additional mass storage.

Upload

The transmission of data from a mobile computer to a host computer.

Windows CE

Microsoft's operating system for small devices, designed as a foundation of software building blocks that could be assembled in many different ways to create new devices.

Wireless

The transmission of data using radio waves.

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